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6 March 2008

(54) Title: COMPOSITIONS FOR USE IN IDENTIFICATION OF ADVENTITIOUS CONTAMINANT VIRUSES

(57) Abstract: The present invention provides oligonucleotide primers, compositions, and kits containing the same for rapid iden-
tification of viruses by amplification of a segment of viral nucleic acid followed by molecular mass analysis.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/061307

A. CLASSIFICATION OF SUBJECT MATTER
INV. C12Q1/70

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification or symbols)
C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, Sequence Search

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2005/075686 A (ROCHE DIAGNOSTICS GMBH [DE]; HOFFMANN LA ROCHE [DE]; SCHORLING STEFAN) 18 August 2005 (2005-08-18) example 1	1-67
X	JURINKE C ET AL: "Application of nested PCR and mass spectrometry for DNA-based virus detection: HBV-DNA detected in the majority of isolated anti-HBc positive sera" GENETIC ANALYSIS: BIOMOLECULAR ENGINEERING, ELSEVIER SCIENCE PUBLISHING, US, vol. 14, no. 3, January 1998 (1998-01), pages 97-102, XP004114932 ISSN: 1050-3862 abstract ----- -/-	1

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another claim or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- *Z* document member of the same patent family

Date of the actual completion of the international search

16 October 2007

Date of mailing of the international search report

09/01/2008

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Authorized officer

Cornelis, Karen

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2006/061307

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:
 - a. type of material:
 - ☒ a sequence listing
 - ☐ table(s) related to this sequence listing
 - b. format of material:
 - ☒ on paper
 - ☒ in electronic form
 - c. time of filing/furnishing:
 - ☒ contained in the international application as filed
 - ☒ filed together with the international application in electronic form
 - ☐ furnished subsequently to this Authority for the purpose of search
2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
3. Additional comments:

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2006/061307

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This international searching authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-13, 35, 60-66 (partially) and 14-17, 36-42, 67 (completely)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13, 35,60-66 (partially) and 14-17, 36-42,67 (completely)

Primers for the amplification of members of the Dependovirus genus, the primers having a sequence as in SEQ ID NOs 160, 161, 163, 164, 165, 168, 329, 330, 332, 333, 334, 336. Methods, kits and compositions using these primers.

2. claims: 1-13, 35 (partially) and 18,19 (completely)

primers and methods for the amplification and identification of Erythrovirus and Parvovirus genera.

3. claims: 1-9,20,21, 52, 60-66(partially) and 22-25, 53-59 (completely)

Primers for the amplification of members of the Pneumovirinae sub family, the primers having a sequence as in SEQ ID NO 103-113,274-281. Methods, kits and compositions using these primers.

4. claims: 1-9,20,21,52 (partially) 26,27,28 (completely)

Primers and methods for the amplification and identification of Respirovirus, Avulavirus and Rubulavirus genera.

5. claims: claims 1-9, 29, 60-66 (partially) and 30,-34,43-51, 68 (completely)

Primers for the amplification of HBV, the primers having a sequence of portions of SEQ ID NO 338, or as in 66-75,235-244. Methods, primers and kits using these primers.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/061307

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indicator, where appropriate, of the relevant passages	Relevant to claim No.
X	SAMPATH RANGARAJAN ET AL: "Rapid identification of emerging pathogens: coronavirus." EMERGING INFECTIOUS DISEASES MAR 2005, vol. 11, no. 3, March 2005 (2005-03), pages 373-379, XP002454984 ISSN: 1080-6040 abstract	1
A	WO 02/099130 A (UNIV LONDON [GB]; GRIFFITHS DAVID JOHN [GB]; KELLAM PAUL [GB]; WEISS R) 12 December 2002 (2002-12-12) abstract	1-67
X	WO 03/100035 A (ISIS PHARMACEUTICALS INC [US]; ECKER DAVID J [US]; GRIFFEY RICHARD H [US]) 4 December 2003 (2003-12-04) the whole document	1,2
Y	WO 95/11997 A (DEUTSCHES KREBSFORSCH [DE]; KERN ANDREA [DE]; KLEINSCHMIDT JUERGEN [DE]) 4 May 1995 (1995-05-04) sequence 5	3-17, 35-42, 60-67
Y	KATANO H ET AL: "IDENTIFICATION OF ADENO-ASSOCIATED VIRUS CONTAMINATION IN CELL AND VIRUS STOCKS BY PCR" BIOTECHNIQUES, INFORMA LIFE SCIENCES PUBLISHING, WESTBOROUGH, MA, US, vol. 36, no. 4, April 2004 (2004-04), pages 676-680, XP001207105 ISSN: 0736-6205 the whole document	3-17, 35-42, 60-67
Y	EP 1 310 571 A2 (TRUSTEES OF THE UNIVERSITY OF [US]) 14 May 2003 (2003-05-14) sequences 117,118,120	3-17, 35-42, 60-67
P,X	WO 2006/094238 A (ISIS PHARMACEUTICALS INC [US]; SAMPATH RANGARAJAN [US]) 8 September 2006 (2006-09-08) the whole document	1-17, 35-43, 60-67

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/061307

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 2005075686	A	18-08-2005	CA 2559949 A1 JP 2007521814 T US 2007281294 A1	18-08-2005 09-08-2007 06-12-2007
WO C2099130	A	12-12-2002	NONE	
WO C3100035	A	04-12-2003	AU 2003269809 A1	12-12-2003
WO 9511997	A	04-05-1995	AT 188746 T CA 2175256 A1 DE 69422634 D1 DE 69422634 T2 DK 725837 T3 JP 9504173 T US 6927281 B1	15-01-2000 04-05-1995 17-02-2000 27-07-2000 13-06-2000 28-04-1997 09-08-2005
EP 1310571	A2	14-05-2003	AT 317916 T BR 0214119 A CA 2406745 A1 CA 2465868 A1 DE 60209193 T2 DK 1310571 T3 EP 1456419 A2 ES 2258601 T3 HK 1056198 A1 JP 3958191 B2 JP 2003235562 A JP 2005525086 T KR 20050058234 A MX PA04004600 A NZ 532635 A WO 03042397 A2	15-03-2006 28-06-2005 13-05-2003 22-05-2003 28-09-2006 19-06-2006 15-09-2004 01-09-2006 16-06-2006 15-08-2007 26-08-2003 25-08-2005 16-06-2005 13-08-2004 31-05-2007 22-05-2003
WO 2006094238	A	08-09-2006	CA 2600184 A1 EP 1869180 A2	08-09-2006 26-12-2007